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Memo

To: Alan Fetters, Alaska Energy Authority	
From: Anna Lundin, HDR	Project: Fort Yukon Biomass Heating System EA
CC: Anna Kohl, HDR; Steve Stassel, AE&E; Fannie Carroll, GZ Corporation	
Date: 05-21-2012	Job No: Phase 1; Data Review

RE: Completion of an EA for the Fort Yukon Wood District Biomass Heating System

Project Understanding:

The Gwitchyaa Zhee Utility Company (GZU) has applied to the Department of Energy (DOE), Golden Field Office (GFO), the U.S. Department of Agriculture Rural Utilities Service (RUS), and the Denali Commission for financial assistance for the Fort Yukon Wood District Biomass Heating System, which includes the Fort Yukon Combined Heat and Power (CHP) Plant and the Biomass Harvesting Plan in Fort Yukon, Alaska (the Proposed Project).

DOE is designated as the lead federal agency for the development of an Environmental Assessment (EA), in accordance with 40 CFR § 1501.3, and the completion of Section 106 consultation, in accordance with 36 CFR § 800.2(a)(2). RUS and the Denali Commission have jurisdiction by law and special expertise applicable to the EA effort, as defined at 40 CFR §§ 1508.15 and 1508.26 respectively. The EA for the Proposed Project shall be conducted in accordance with the National Environmental Policy Act of 1969 (42 USC 4321 et seq.), and implementing regulations of the Council on Environmental Quality (CEQ), 40 CFR 1501 et seq., and the implementing regulations of each of the Parties including the DOE , (10 CFR Part 1021), the RUS, Environmental Policies and Procedures (7 CFR 1794), and the Denali Commission.

Synopsis of the Applicant's Proposed Project

The proposed project, the Fort Yukon Wood District Biomass Heating System, includes construction and operation of the Fort Yukon CHP Plant and implementation of the Biomass Harvesting Plan in Fort Yukon, Alaska.

The proposed project would replace the existing GZU power plant and provide a new district heating system. The existing GZU power plant would be decommissioned. The new district heating system would receive diesel generation recovered heat from the CHP and be supplemented by a biomass wood boiler. Along with the wood biomass boiler, the proposed CHP site location would contain areas for wood storage, processing, and feed; ancillary equipment; and diesel storage areas.

The CHP and related facilities would be housed on a concrete slab in a pre-engineered metal building constructed on an elevated gravel pad. The CHP would contain electronically controlled fuel-efficient diesel generators with a total installed capacity of 1,900 kW. Two of the existing electronically controlled generators currently operating in the GZU power plant would be reused, and two new electronically controlled fuel-efficient generators would be purchased to replace existing equipment. New switchgear would provide automatic paralleling and load control of the four generating units to maximize generation reliability and fuel efficiency. Critical grade silencers and sound insulated dampers would attenuate noise from the plant. The cooling system would be equipped with new radiators and efficient variable speed motor controls.

A chip-fired wood boiler rated at 3.2-million BTUs would augment the diesel generation recovered heat system and provide heat to meet the district heating system load. The wood boiler would be equipped with chip storage and an automatic chip feed system. The wood processing and feeding area would be immediately adjacent to the chip storage area, and the wood storage yard will be contiguous to the plant site.

In order to provide biomass fuel to the wood boiler, an annual sustainable forest harvest of approximately 80 to 100 acres, to produce approximately 1,600 to 2,000 tons of 25 percent moisture content woody biomass in the form of wood chips, would occur as part of the proposed project. For the first five years all harvest would be within a five-mile radius of the village in order to develop the forest management capacity as an adaptive management program. A forty-year biomass rotation would be expected and utilization would go out to a 10-mile radius around the village. Regeneration would focus on faster growing hardwood stands, creating a series of stands of different ages, structural diversity and species composition across the landscape and would allow a harvest of approximately 4,500 acres during the projected forty-year rotation period.

The harvest and transportation of woody biomass would occur mostly in the winter after freeze up and before break up in the spring while the ground and rivers are frozen. Some harvest would occur during the summer season in selected non-wetland areas that are dry enough to support harvest with no negative soil or wetland impacts. The target species would primarily be hardwoods, especially cottonwoods which are expected to take about 40 years to regenerate to approximately 35 tons per acre standing green biomass, through coppice regeneration. All harvesting activities would be in full compliance with the Alaska Forest Resources Practices Act (AFRPA).

The district heating system would provide heat to public and community buildings located within the downtown community core and adjacent areas. Below grade preinsulated arctic piping would be routed from the CHP facility to the end-user buildings. End-user buildings would be tied into the district heating system via a combination of heat exchangers, fan coil units and unit heaters. Each end-user would be equipped with a BTU energy meter for metering and recording delivered heat.

The No-Action Alternative

Under the No-Action Alternative, DOE would not authorize use of Tribal Energy Program funds for the proposed project. As a result, the GZU could delay the proposed project as it sought other funding sources, reduce the scope of the project and continue, or abandon the project if it could not obtain other funding. Although the GZU might proceed with the project if DOE did not authorize expenditures, DOE assumes for the No-Action Alternative analyses in this EA that the proposed project would not proceed.

Thus, under the No Action Alternative, operation of the existing GZU power plant would continue. Fuel oil would continue to be used to heat the primary commercial and public buildings in Fort Yukon, including the school. Annual fuel usage would continue at current levels.

Synopsis of EA Review:

1. Format of EA should be consistent with DOE GFO's NEPA Style Guide and should facilitate easy review by DOE, RUS, the Denali Commission, and the public
2. Comprehensive list of applicable laws and regulations should be added
3. Alternatives Considered but Dismissed section needs to added
4. Specifications of generators and boiler associated with Proposed Action need to be added
5. Details/specification on underground piping to deliver heat to end-users from the CHP Plant needs to be added to Proposed Action description and relevant analyses
6. Life term of Proposed Action needs to be defined
7. Construction details need to be added (e.g. time frames of construction/equipment to be used/estimate of construction workers and details on potential job creation)

8. Project specific best management practices (BMPs) and mitigation measures need to be added in to the body of the EA; including BMPs for harvesting and reseeding/revegetation of harvested areas (currently found in the 5 year Forestry Plan)
9. Details on the GZ Utility power plant needs to be added; both current operations should be discussed under the No-Action alternative (e.g. continuation of operation) and relevant details on decommissioning needs to be added to Proposed Action
10. A table outlining all permits and approvals needed for the Proposed Action needs to be added
11. A section discussing impact areas dismissed from further analysis should be added; Chapter 3 should be reorganized so that relevant resource areas discussed in full logically follow one another
12. Affected environment sections need to be added
13. Analyses of impacts sections need to be beefed up so that the reader can clearly understand the justification for stating what particular impacts would occur.

Suggested Table of Contents for Fort Yukon Biomass Heating System EA:

Executive Summary

1.0 Introduction
- 1.1 Background
- 1.2 Site Location
- 1.3 Purpose and Need
- 1.4 Organization and Objectives of this EA
- 1.5 Scoping and Public/Agency Involvement

2.0 Proposed Action and Alternatives
- 2.1 DOE Proposed Action
- 2.2 Proposed Project
  - 2.2.1 Construction
  - 2.2.2 Biomass Harvest
  - 2.2.3 System Operation
  - 2.2.4 Permits and Approvals
  - 2.2.5 Applicant Committed Measures (e.g. mitigation measures/BMPs)
- 2.3 No Action Alternative
- 2.4 Alternatives Considered but Dismissed

3.0 Affected Environment and Environmental Consequences
- 3.1 Resource Areas Evaluated and Dismissed from Further Analysis
- 3.2 Geology and Soil Resources
  - 3.2.1 Affected Environment
  - 3.2.2 Environmental Consequences of Proposed Project
  - 3.2.3 Environmental Consequences of No Action
- 3.3 Water Resources *(to include surface water/wetlands/floodplains)*
  - 3.3.1 Affected Environment
  - 3.3.2 Environmental Consequences of Proposed Project
  - 3.3.3 Environmental Consequences of No Action
- 3.4 Biological Resources *(to include vegetation/wildlife/threatened and endangered species)*
  - 3.4.1 Affected Environment
  - 3.4.2 Environmental Consequences of the Proposed Project
  - 3.4.3 Environmental Consequences of No Action
- 3.5 Air Quality
  - 3.5.1 Affected Environment
  - 3.5.2 Environmental Consequences of Proposed Project

3.5.3 Environmental Consequences of No Action

3.6 Noise
- 3.6.1 Affected Environment
- 3.6.2 Environmental Consequences of Proposed Project
- 3.6.3 Environmental Consequences of No Action

3.7 Land Use *(to include discussion on visual resources of landscape)*
- 3.7.1 Affected Environment
- 3.7.2 Environmental Consequences of Proposed Project
- 3.7.3 Environmental Consequences of No Action

3.8 Cultural and Historic Resources
- 3.8.1 Affected Environment
- 3.8.2 Environmental Consequences of Proposed Project
- 3.8.3 Environmental Consequences of No Action

3.9 Socioeconomics and Environmental Justice
- 3.9.1 Affected Environment
- 3.9.2 Environmental Consequences of Proposed Project
- 3.9.3 Environmental Consequences of No Action

3.10 Transportation
- 3.10.1 Affected Environment
- 3.10.2 Environmental Consequences of Proposed Project
- 3.10.3 Environmental Consequences of No Action

3.11 Hazardous Materials and Waste Management
- 3.11.1 Affected Environment
- 3.11.2 Environmental Consequences of Proposed Project
- 3.11.3 Environmental Consequences of No Action

3.12 Human Health and Safety
- 3.12.1 Affected Environment
- 3.12.2 Environmental Consequences of Proposed Project
- 3.12.3 Environmental Consequences of No Action

4.0 Cumulative Impacts
- 4.1 Cumulative Impacts
- 4.2 Irreversible/Irretrievable Commitment of Resources
- 4.3 The Relationship between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity
- 4.4 Unavoidable Adverse Impacts

5.0 References

List of Tables
List of Figures
List of Appendices
List of Acronyms and Abbreviations

Schedule (taken from Draft Agency MOU, Attachment A):

DOE receipt of preliminary draft (PEA) from the proponent - (Start Date [SD])

DOE review and revision of PEA - (SD + 21 days)

RUS and Denali Commission PEA review and comment, 14 days due – (SD + 35 days)

DOE incorporates RUS and Denali Commission comments, 10 days (SD + 45 days)

Complete suitability of document for public review and address any DOE comments from suitability review, 10 days (unknown date)

Conduct Public Outreach

News Release –Preparation, allow for RUS and Denali Commission review, + 14 days
Post PEA and letters to interested parties to Web, + 2 days
Mailings (letters to interested parties), + 2 days
Public comment period, + 30 days

Finalize PEA

Project proponent lead works with DOE to incorporate public comments, + 7 days
DOE conducts final review and provides final recommendations, + 7 days

Complete FONSI, if applicable, + 4 days

Conduct Public Outreach

News Release, + 14 days calculated from incorporation of final recommendation
Post a DOE FONSI and FINAL EA to the Web, + 2 days

Points of Clarification:

- Does DOE want a complete Administrative Record as a deliverable from proponent?
- Does DOE want project proponent to submit draft news releases, consultation letters, dear reader letters, and/or draft decision document?
- Does DOE want proponent to coordinate and pay for notices in local newspapers?
- Do the agencies want proponent to draft consultation and interested parties distribution lists?
- Does DOE expect proponent to print and distribute the Draft and Final EA and decision document as needed, in accordance with all agency preferences?